

SPONSORED PROJECT TERMINATION SHEETDate 3/17/83

Project Title: Guided Projectile Project

Project No: A-2418

Project Director: c/o R. Trebits (was B. C. Appling who is no longer at GIT)

Sponsor: G. E., Armament Systems Dept., Burlington, Department.

Effective Termination Date: 5/31/79Clearance of Accounting Charges: 6/30/79

Grant/Contract Closeout Actions Remaining:

No further action required.

- ☐ Final Invoice and Closing Documents
- ☐ Final Fiscal Report
- ☐ Final Report of Inventions
- ☐ Govt. Property Inventory & Related Certificate
- ☐ Classified Material Certificate
- ☐ Other _____

Note: Project is terminated except that the the Proprietary Information Exchange Agreement is in effect until 5/15/83.

Assigned to: RAIL-AD (School/Laboratory)COPIES TO:

Administrative Coordinator
Research Property Management
Accounting
Procurement/EES Supply Services

Research Security Services
Reports Coordinator (OCA)
Legal Services (OCA)
Library

EES Public Relations (2)
Computer Input
Project File
Other Trebits

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT INITIATION

Date: 11/27/79

Project Title: Guided Projectile Project

Project No: A-2418

Project Director: Mr. B.C. Appling

Sponsor: General Electric Company; Burlington, VT 05402

Agreement Period: From 4/2/79 Until Sept-1-1983
5/31/79

Type Agreement: Standard Industrial Research Agreement
(Purchase Order No. SH879K for billing purposes)

Amount: \$5,000

Reports Required: Monthly Progress Reports; Final Technical Report

Sponsor Contact Person (s):

Technical Matters

Mr. C.D. Newsham
General Electric Company
Armament Systems Dept.
Lakeside Avenue
Burlington, VT 05402
802/658-1500

G.D. Baron, Buyer
Subcontracts, Purchasing

Contractual Matters

(thru OCA)

Defense Priority Rating: N/A

Assigned to: RAII/RA (~~School~~/Laboratory)

COPIES TO:

Project Director
Division Chief (EES)
School/Laboratory Director
Dean/Director-EES
Accounting Office
Procurement Office
Security Coordinator (OCA)
Reports Coordinator (OCA)

Library, Technical Reports Section
EES Information Office
EES Reports & Procedures
Project File (OCA)
Project Code (GTRI)
Other _____



ENGINEERING EXPERIMENT STATION
GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

January 22, 1980

General Electric Company
Armament Systems Department
Lakeside Avenue
Burlington, Vermont 05402

Attention: Chuck Newsham, Jerry McGinley, George Baron

Subject: Progress Report on Project A-2418, "Guided Projectiles," General Electric, P. O. No. 024-SH879K

Gentlemen:

A working meeting was held at the Georgia Tech Research Facility at Cobb County (GTRFCC) from December 10, 1979 to December 12, 1979. The purpose of the meeting was to have a technical exchange of views on guided projectile concepts and considerations. The attendees were:

Chuck Newsham	General Electric, Burlington
Jerry McGinley	General Electric, Burlington
Bob Hare	General Electric, Tempo
Paul Boswell	General Electric, Pittsville
John Windyka	
Mike Fitleson	General Electric, E-Lab
Pete Costello	
Bob Appling	
Eric Sjoberg	Georgia Tech, EES
Bob Trebits	

The following preliminary conclusions were reached:

1. There are three primary guidance techniques for projectile guidance, although the distinctions between them becomes vague at times; they are:
 - (a) Command Guidance
 - (b) Beam Rider
 - (c) Semi-Active Homing
2. The most straightforward approach was also the most demanding in terms of projectile maneuver requirements. This was the Simple Beam Rider approach, wherein the projectiles are guided as a group along the line-of-sight to the target.

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3. It was agreed that if the projectile maneuver requirements were achievable and if the reduced effective range for maneuvering targets were acceptable, the straightforwardness of the Simple Beam Rider would make it the favored approach.
4. In order to achieve the desired degree of accuracy, most of the Command Guidance approaches require projectile tracking.
5. Previous General Electric sponsored projectile measurement projects substantiate that projectile skin tracking in a benign environment is feasible, eliminating the need for beacon operation.
6. Projectile tracking in an ECM environment is more difficult but techniques are available which could retain the capability. More detailed analysis is needed in this area.
7. Two difficulties which may affect the feasibility of Semi-Active Homing guidance approaches are:
 - (a) backscatter signal strength for projectile homing, bistatic cross-section considerations,
 - (b) establishment of a velocity vector reference system.

Georgia Tech (GIT/EES) has addressed several of the above considerations within time and budgetary constraints. A final technical report is being prepared and will be provided to General Electric in the near future which documents the results of these preliminary analyses.

As a logical follow-up to the preliminary analyses accomplished to date, GIT/EES suggest that additional, more detailed analysis be performed in the following areas:

1. Accuracy of Simple Beam Rider and Predictive Beam Rider approaches, especially addressing effects of target tracking noise.
2. Further analysis of Semi-Active Homing techniques special considerations.
3. More detailed analysis of projectile skin tracking feasibility in benign and ECM environments.
4. Further consideration of the projectile orientation ambiguity problem.
5. Assessment of the difficulty of the projectile capture phase of the Simple Beam Rider approach.

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GIT/EES will be providing a technical report on the work accomplished thus far, in the near future, and will be pleased to perform the follow-on work suggested above at General Electric's request.

Respectfully submitted,

Bobby C. Appling
Project Director

J. D. Echard, Chief
Radar Applications Division

BCA/dw